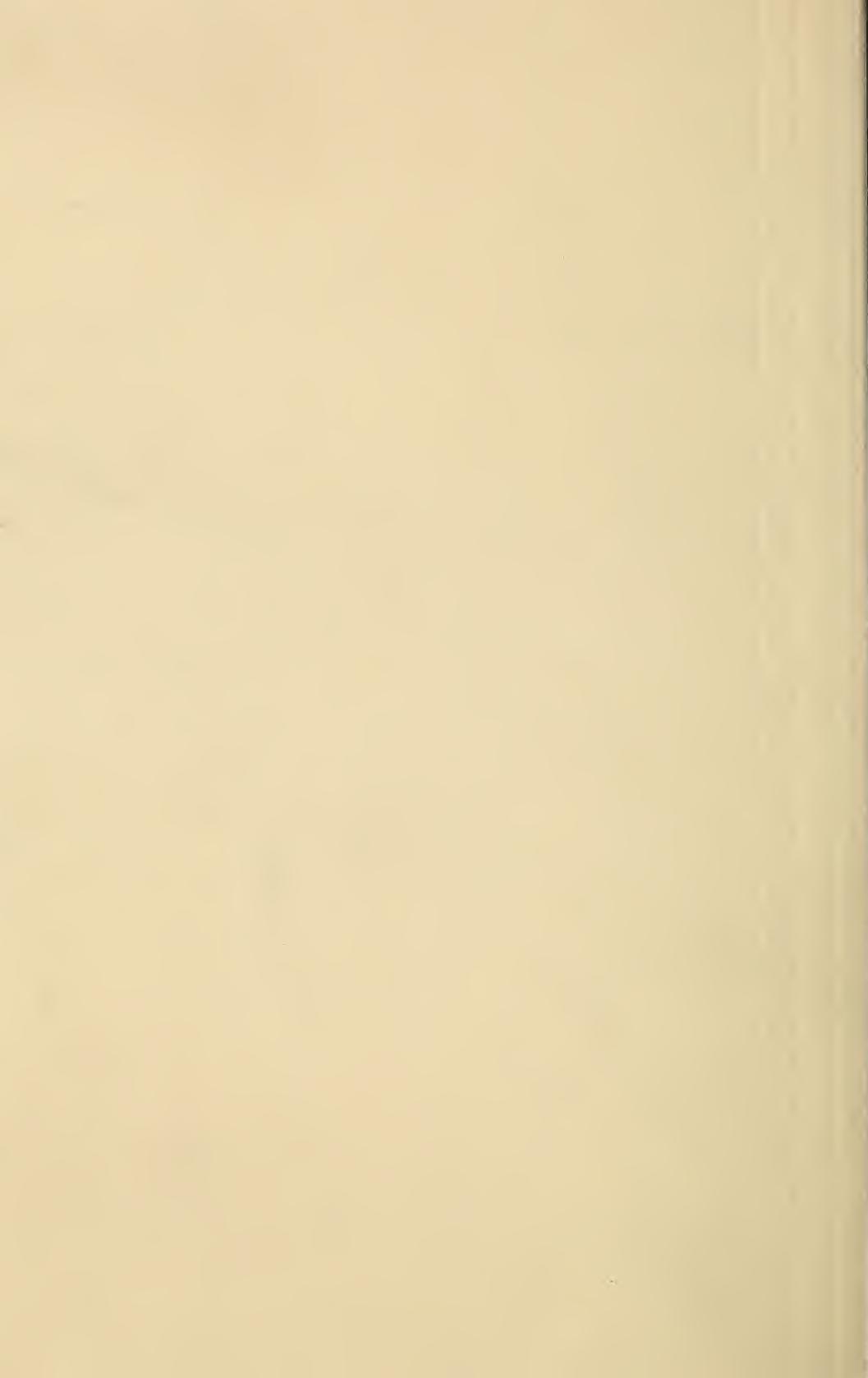


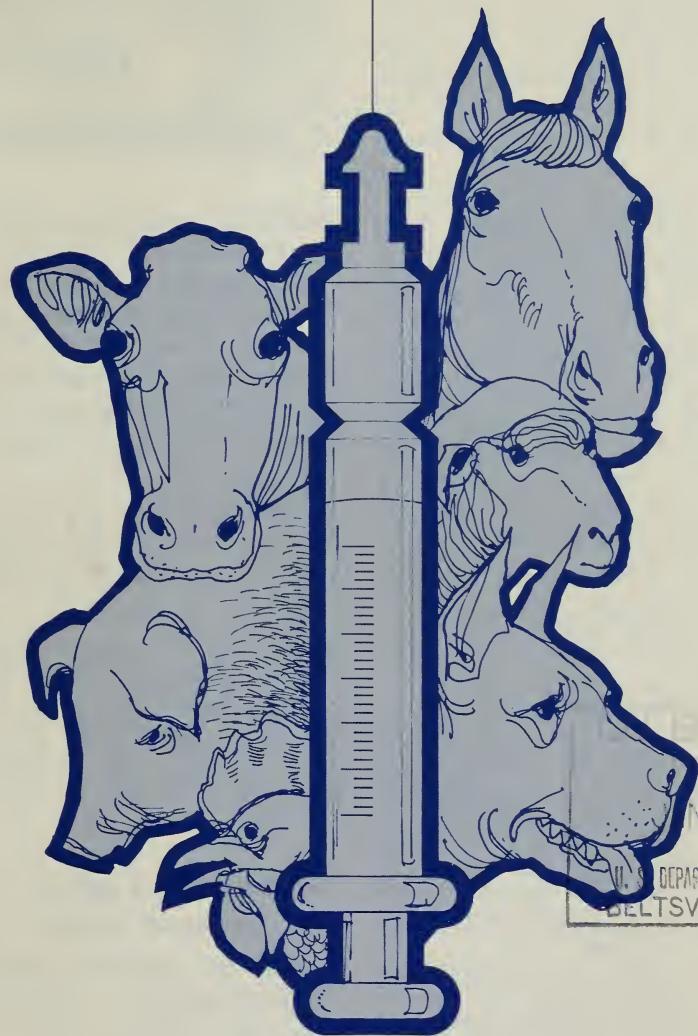
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U. S. DEPARTMENT OF AGRICULTURE
BELTSVILLE BRANCH

veterinary biologics

help fight animal diseases

veterinary biologics help fight animal diseases

- Thirty years ago, you could turn to only a half dozen vaccines that would help you fight animal diseases. Today, you can call on an arsenal of veterinary biologics which includes some 230 kinds of vaccines, antiserums, antitoxins, and similar products. The list has doubled in the past 10 years. These products of science are used to diagnose, treat, or prevent 58 animal diseases that may occur in livestock, poultry, dogs, cats, rabbits, mink, and chinchilla.

Years of research and testing have given us more and better biological weapons against livestock and poultry diseases, but one feature about them has remained the same—they must be treated with utmost care. They are made from disease organisms or their products.

The precise care that must be given biologics extends from the manufacturing laboratory to the farm or ranch. A breakdown along the way . . . failure to observe a single important precaution . . . could endanger thousands of animals.

To help assure that veterinary biologics are safe and effective,

the U.S. Department of Agriculture Veterinary Biologics Division licenses manufacturers and evaluates biologics for safety and potency. You can identify products of these manufacturers by the U.S. license number that appears on the label of each biologic container.

You will find precautions and guides for handling, storage, and use on the labels of veterinary biologics licensed by the U.S. Department of Agriculture. Success with these products hinges on properly timed and skilled administration of a dosage that has been prescribed for a specific need.

Gather the Facts On Disease Risks

Use of modern biologics and good husbandry practices not only may prevent heavy disease losses in your own herd or flock, but also may be a key factor in stemming widespread outbreaks of disease. Your veterinarian can provide information about when to vaccinate and what diseases you should protect your livestock



and poultry against. Vaccines and other biologics should not be considered as substitutes for proven sanitation, feeding, and other management practices that promote good health in animals.

Don't wait for disease to show up before you vaccinate. Animals need 1 to 2 weeks after vaccination to acquire active immunity. Since occurrence of diseases may vary by region, by year, and by season, you'll want all the facts you can gather to weigh the risks for each disease that could threaten your operation. Also, there may be Federal or State requirements for vaccination you'll want to satisfy in order to carry out plans for marketing your animals.

In addition to your veterinarian, sources of animal health information include your county agricultural agent and specialists at your State's Land-Grant College or University. State and USDA veterinarians can provide information about regional and national cooperative programs underway to eradicate such diseases as hog cholera, bovine tuberculosis, and brucellosis.

How Animals Fight Disease Organisms

Animals may inherit immunity to disease or they may acquire it. This power to resist development of disease can be acquired in two ways: (1) As the result of successfully overcoming a natural infection, or (2) as a result of administration of a biologic such as a vaccine.

Vaccination produces active and continuing immunity to a disease. No vaccine can be said to provide 100 percent protection for all animals because animals differ in their response to vaccination and the amount of resistance they develop. Proper vaccination usually provides an animal with enough protection to withstand exposure to disease that would have been deadly before vaccination.

Many vaccines expose animals to mild attacks by specific disease organisms or the products of disease organisms that are contained in the biologic. This triggers the animal's built-in system of defense against invading organisms. Antibodies . . . nature's disease fighters . . . are formed by the animal's body cells and the battle begins. Even after overcoming the mild infection caused by the vaccine, the animal's body continues to produce antibodies. Within 1 or 2 weeks, enough antibodies are present to fight off future attacks by the same disease organism and active immunity is established.

Antiseraums give passive immunity to disease organisms. This

form of immunity is immediate but short-lived, usually lasting from 2 to 4 weeks. Protection is provided by the antibodies contained in an antiserum. When the supply of antibodies is exhausted, protection ceases. Administration of an antiserum does not stimulate an animal's body to produce antibodies.

With some diseases, such as hog cholera, you can obtain the quick protection provided by antiserum, and the longer immunity stimulated by vaccine, by simultaneous inoculation of the two biologics.

Veterinary Biologics: Principal Types And Uses

The more than 200 types of veterinary biologics used to fight animal and poultry diseases include vaccines, antiserums, bacterins, antigens, and antitoxins. Some products are administered by injection, others by spraying or by mixing in drinking water. Still others are used in laboratory testing of animal tissues or blood for diagnosis of disease. Vaccines account for more than 90 percent of the veterinary biologics produced in the United States. The remainder are products used in treatment or diagnosis of animal diseases. Some biologics are sold for use only by veterinarians. Most may be purchased and used by livestock producers.

Vaccines

Vaccines are used to provide relatively long immunity against diseases. Vaccines are prepared from virulent, attenuated, weak-

ened, or dead viruses and bacteria.

Killed-Virus Vaccine is produced by injecting virus into a susceptible animal to cause the disease, then killing the animal at the height of the infection and preparing vaccine from selected animal tissue. Formalin, or other agents, are used to inactivate the virus. Example: Killed-virus Newcastle vaccine.

Live-Virus Vaccine is produced by inoculating a live virus into a medium, such as chick embryo, permitting the virus to grow, then preparing the vaccine from infected fluids and tissues of the embryo. Example: Live-virus, B strain, Newcastle disease vaccine.

Modified Live-Virus Vaccine is prepared by processing the disease-causing virus in such a way that it no longer causes disease but stimulates immunity. Example: Modified live-virus hog cholera vaccine, derived from inoculated rabbits.

Dessicated Vaccine is freeze-dried vaccine that must be reconstituted to a liquid state before use by addition of a diluent, usually distilled water. Example: Live-virus rabies vaccine.

Monovalent Vaccine and Monovalent Bacterin are biological products used to stimulate immunity to a single disease organism. Examples: Bluetongue vaccine, blackleg bacterin.

Polyvalent Vaccine and Polyvalent Bacterin are biological products which stimulate immunity to two or more disease organisms. Examples: Canine dis-

temper-hepatitis vaccine, black-leg-hemorrhagic septicemia bacterin.

Antiserum

Antiserum is used for quick protection against a disease. It contains large numbers of antibodies (disease fighters) that provide protection for 2 to 4 weeks. More lasting immunity is obtained against some diseases by using some vaccines simultaneously with antiserums. Large doses of an antiserum may have curative value. Example: Hog cholera serum.

Antitoxin

Antitoxin is injected to neutralize poisons (toxins) caused by an invading disease organism and to produce short-lived immunity similar to that produced by antiserum. Antitoxin contains large numbers of antibodies. Example: Tetanus antitoxin.

Bacterin

Bacterin is used to stimulate immunity against bacterial diseases. It contains a standardized number of killed bacteria. Upon injection a bacterin causes an animal to produce antibodies that will fight future invasions of the same type of bacteria.

Mixed bacterin contains standardized numbers of four or more bacterial organisms and is used to prevent conditions attributed to the organisms used in making the product. Example: Erysipelas bacterin.

Diagnostic Agents

Diagnostics and diagnostic antigens are biologics used to de-

tect and diagnose disease, either by causing a typical reaction following injection into an animal (diagnostic) or producing standard results in laboratory blood tests (diagnostic antigen). Examples: Tuberculin antigen, mycoplasma gallisepticum antigen, pullorum antigen.

Use the Label As a Buying Guide

When you buy veterinary biologics, look for the U.S. veterinary license number on the product label. This is your assurance that the product has been manufactured and tested under strict USDA standards. Other information on the label will help you evaluate advertising claims about the product. *Federal law requires that all information on the labels of USDA-licensed veterinary biologics—and in accompanying literature—must be reviewed and approved by USDA's Veterinary Biologics Division.*

Labels on USDA-licensed biologics show the true name of the product, serial number, name and address of manufacturer, a dosage table, quantity, storage instructions, precautions, and expiration date. Manufacturers may include other approved information.

Buy biologics from a reliable outlet. The way these products have been handled by the wholesaler or retailer has an important bearing on their condition when you purchase them.

Buy only as much biologic as you need for the immediate job.

An oversupply that must be stored could lose potency and become worthless.

Select the biologic that competent authorities recommend as safe and effective for your specific use. If you have doubts, consult your veterinarian.

Handle and Store Veterinary Biologics With Care

Handle and store veterinary biologics carefully to preserve their beneficial characteristics. Improper handling and storage can make them useless, even dangerous.

A biologic is most potent immediately after it has been manufactured . . . from that time on, nothing can be done to improve its potency, but careless handling during shipping and storage will cause it to lose potency.

If biologics are shipped to you, carefully check the shipping arrangements. Make sure the products are packed to maintain a chilled condition throughout shipment.

Store biologics in subdued light and under refrigeration, ideally at 35° to 45° F. Never allow them to freeze. They may lose potency if the temperature fluctuates greatly.

During actual use, it is best to maintain the proper storage temperature by packing biologics in ice.

Administer Biologics Skillfully

Have a veterinarian administer biologics, if possible. Only a per-

son who has special training and knowledge of animal diseases and is experienced in use of biologics should attempt immunization of animals. Placing this important task in the hands of an amateur could endanger your entire herd or flock.

Vaccinate only healthy animals. Chronic infections or presence of parasites lowers resistance and could cause the vaccinated animal to fight several diseases at the same time. Immunization will be adversely affected by anything that weakens the animal. This includes overwork, exposure to cold, lack of proper feed, and shipment over long distances, especially in stormy weather.

To increase chances for successful vaccination, eliminate as many adverse conditions as you can. Free animals of parasites, clear up chronic infections, eliminate deficiencies in their diet, and protect them from cold and dampness.

Age also is a factor in vaccination. Neither very young nor



very old animals respond as well to vaccination as those between the two extremes.

Manufacturer's labels and accompanying literature are your best guides for proper use. Carefully read all information on labels and in direction circulars before starting administration.

Some general rules for administration:

- Use sanitary procedures and avoid contamination.
- Carefully cleanse and disinfect site of inoculation.
- Thoroughly sterilize all instruments by boiling.
- Administer the recommended full dose.
- Never mix two or more biologics.

Follow-up Is Important

Keep records of vaccination, including serial numbers of products. This information may be important in tracing the cause of unsatisfactory results should they occur.

Never save opened, unused portions of biologics. These can easily lose potency, become impure and unsafe.

Safely dispose of empty biologic containers and unused portions by burning them or burying them at least 18 inches deep on level land. Watch your animals closely for 2 to 3 weeks after vaccination. Reactions such as swelling or lesions may normally occur after administration of some vaccines, such as anthrax or brucella vaccines. However, if reactions

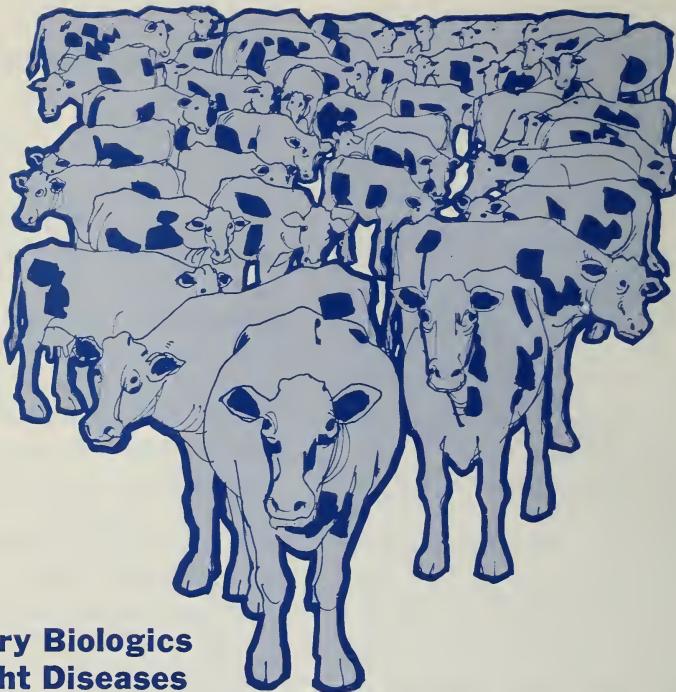
persist, or if your animals show general symptoms of disease, call your veterinarian.

Veterinary Biologics Division

The Veterinary Biologics Division is a part of the Agricultural Research Service of the U.S. Department of Agriculture. The Division's mission is to make sure animal biologics are safe and effective. For the most part these products are used to immunize livestock and poultry against disease and are derived from living organisms or their products.

Regulation of the industry that produces medicines, drugs, and chemicals (such as sulfathiazole and antibiotics) that are used to treat and cure animal diseases is the responsibility of the Food and Drug Administration of the Department of Health, Education, and Welfare.

The Secretary of Agriculture was granted authority to regulate the production and marketing of veterinary biologics in the Virus-Serum-Toxin Act of March 4, 1913. The Act, and regulations developed under it, extend to products marketed in interstate and international commerce. Under the Act, USDA has the responsibility for licensing, inspecting, and testing veterinary biologics to make certain they are not worthless, contaminated, dangerous, or harmful. Today, 55 U.S.-licensed manufacturers co-operate with USDA each year, producing enough safe, effective biologics to treat almost 8 billion animals.



Veterinary Biologics Help Fight Diseases

- ✓ Purchase wisely
- ✓ Handle carefully
- ✓ Store properly
- ✓ Administer skillfully

**Look for the
U.S. Veterinary License Number
on the Label**

**Agricultural Research Service
Washington, D.C.**

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Veterinary Biologics Division**